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REVIEW

Nursing home staff training in dementia care: a systematic review of evaluated programs

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ABSTRACT

Background: We reviewed studies of in-service interventions for caregivers of persons with dementia in nursing homes published between 1990 and 2004. The aim was to obtain an overview of the evaluated interventions and to characterize their methodological quality.

Methods: A thorough literature search was conducted, including searching electronic databases for selected intervention studies and previous reviews. Selected studies were summarized and compared along certain categories, and methodological quality was assessed.

Results: A total of 21 studies were identified, mostly published in the United States. Most were of poor methodological quality. Although nearly all reported positive effects, their results must be interpreted cautiously due to methodological weaknesses. Extensive interventions with ongoing support successfully demonstrated sustained implementation of new knowledge. Owing to methodological weaknesses and a lack of follow-up evaluations, little or no evidence existed for the efficacy or, particularly, the transfer of knowledge in simpler interventions when reinforcing and enabling factors were not present.

Conclusion: On an international and, particularly, on a national level a lack of evaluated in-service training programs for caregivers in homes for people with dementia is apparent. Methodological weakness is common. This study highlights the need for well-defined methodologically improved studies, providing conclusive evidence of the effects of intervention types to help improve the quality of dementia care.

Key words: long-term care, institutional staff training, dementia, evaluation, intervention research

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Introduction

Dementia disorders are a main reason for admission to nursing homes (Bickel, 2003). Longitudinal studies show two-thirds of those with dementia begin nursing home residence during their illness, often at an advanced stage, when care-giving at home becomes impossible (Bickel, 1996; 1998). A Swedish study estimated the share of institutionalizations attributable to dementia at 61% (Agüero-Torres *et al.*, 2001). Of those needing intensive care in German nursing homes, 50–70% suffer from a dementia disorder (Bickel, 2001).

The high proportions of gerontopsychiatric and dementing residents place new demands on nursing home staff. However, a large proportion of care is still performed by staff without adequate qualifications for dealing with dementia cases (Cofone, 2001).

Public and private institutions have acknowledged the need for continuing education and advanced training of nursing home staff and have reacted with a multitude of initiatives and programs, offering further education and training for caregivers in nursing homes. The topic has received growing attention from researchers over the past decade with a rise in publications concerning training of nursing home staff.

However, little scientific evidence exists on the efficacy of gerontopsychiatric continuing education (Kühnert and Gaßmann, 1997). This particularly applies to training for nursing home staff caring for dementia residents. An extensive literature search going back over the past 10 years identified only six studies that formally evaluated training programs for caregivers of nursing home residents with dementia (Beck *et al.*, 1999). Earlier reviews focused on program efficacy rather than methodological quality. To our knowledge, no concise overview exists of evaluations of nursing home staff training programs in dementia care, and none that has evaluated the methodological quality of these programs.

This article aims to provide a comprehensive overview of evaluated nursing home staff training programs in both dementia care in homes for senior citizens and geriatric care, from 1990 to 2004, and to assess the methodological quality of these studies.

Methods

The literature search sought to capture all evaluated in-service training for nursing home staff caring for people with dementia from 1990 to 2004, as this was a period when research interest in the field increased exponentially. For the same reason, the search was not limited to randomized controlled or quasi-experimental trials.

The following electronic databases were searched to identify relevant studies: PubMed, CINAHL, Cochrane, Dimdi (including SoMed, Heclinet, GeroLint, CancerLit, MEDLINE and DATHA), PsycInfo and Psyndex., using the following key words: "*dementia*", "*Alzheimer's disease*", *nursing*, *nursing home*, *nursing staff*, *nurs**, *care*, *training*, *program*, *education*, *continuing education*,

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caregiver, *staff*, *communication*, *knowledge*, *evaluation*, *intervention*, *Pflege*, *Demenz*, *Alzheimer*, *Fort- und Weiterbildung*, *Evaluation*, *Schulung*.

To obtain as many relevant studies as possible, we also searched for reviews on the topic of interest. We selected titles or abstracts meeting our interests, those leaving room for doubt and those without enough information for rejection or inclusion. Two investigators searched and reviewed the material independently to assess the relevance of each article. Only articles meeting the following inclusion criteria were chosen for further analysis:

- the setting was a nursing home, a long-term care facility or a special care unit (excluding acute care, geropsychiatric and palliative hospitals and the combination of LTC-facilities with other settings);
- the population of interest was only nursing home staff for institutionalized persons with dementia;
- the intervention was in-house staff training with the educational focus on dementia care;
- there was evident evaluation of the intervention using empirical data;
- the study was published in a scientific English- or German-language journal;
- the publication date was between 1990 and 2004.

Articles included by only one reviewer were discussed in terms of their relevance until both reviewers reached an agreement. In addition, the reference lists of papers (including studies and reviews) were checked manually to identify further papers meeting the inclusion criteria, which were then retrieved and reviewed. If several articles described the same study, we selected the paper most appropriate for this review.

Table 1 presents selected studies summarized by study (author and country), type of intervention, length, training methods, sample, outcome measures, assessment tools, results, quality score and methodological comments.

Both reviewers classified the studies independently to examine the nature of the training programs and the methodological quality. To investigate intervention types we used a classification system developed by Green *et al.* (1980) and modified by Davis *et al.* (1992). Intervention strategies were sorted by factors (predisposing, enabling, reinforcing) relevant to caregiver's behavior changes affecting both the caregiver's health (e.g. reduction of stress) and the residents' health (e.g. reduction of psychotropic medication). The thoroughly described factors by Aylward *et al.* (2003) are included in Table 2. Therefore, four types of intervention were determined: Type I: only predisposing factors, Type II: predisposing and enabling factors, Type III: predisposing and reinforcing factors and Type IV: a combination of all three intervention types. To assess the methodological quality of the studies, we used a five-item rating scale to deliver a methodological quality score (see Table 3), developed by Brodaty *et al.* (2003), according to criteria based on the Cochrane Collaboration Guidelines (Clarke and Oxman, 2000). Following the Cochrane Collaboration's recommendations (Alderson *et al.*, 2004), we also created descriptive methodological comments

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Table 1. Summary and hierarchy of studies reviewed

AUTHORS (COUNTRY)	INTERVENTION TYPE, -LENGTH (METHODS)	ANALYZED SAMPLE	OUTCOME DOMAINS	ASSESSMENT TOOLS	RESULTS (FOLLOW-UP-RESULTS)	QUALITY SCORE	METHODO-LOGICAL COMMENTS
Wells *et al.*, 2000 (Canada)	Type III: Abilities-focused program of morning care: 5 sessions of 20–30 minutes (exercises, role play or games). Supplemented by: reinforcement sessions (20–30 minutes) every second week for three months after the training	Staff: N = 44 No losses reported Residents: N = 40 loss of 29%	Staff: Interaction-behavior; perceptions of care-giving; level of stress Residents: Interaction-behavior; Level of agitation and functioning	IBM VAS NHUS MIBM PAS LPRS	Staff: Sig. effects on verbal relevance and personal attending, relaxed (sustained). Social flexible behaviors improved slightly but not sig. Residents: Sig. effects on personal attending and calm/functional behaviors, level of agitation and level of overall and social function (sustained)	8	RCT, Random group assignment, unclear allocation method, blinding of the participants and the data collector, no blinding of the trainer and data analyst adequate handling of the attrition, 3- and 6- month follow-up
Burgio *et al.*, 2002 (U.S.A.)	Type IV: Behavior management skill training program[a]: 5-hour in-service sessions (videotaped depiction, examples; discussion of written vignettes, workbook, preparing a individualized behavioral program) Supplemented by: 3 week hands-on training and a staff motivational system (feedback, self-monitoring, performance feedback, incentives)	Staff (CNAs): N = 85 loss of 20% Residents: N = 79 loss of 10%	Staff: Knowledge and Performance of behavior management skills; Occurrence of staff behavior Residents: Agitation during care routines; Occurrence of residents behavior	Knowledge Test and BMSC CABOS CMAI CABOS	Staff: Sig. increase in knowledge in both groups. Sig. effects in 5 of 7 communication strategies (FSM was more effective for maintaining and even improving these skills). Sig. decrease in the use of ineffective strategies in both groups (not sustained), but no general training effects for effective strategies Residents: Sig. reduction in agitation in both groups (maintained at follow-up)	7	RCT, Random group assignment, placebo (CSM) and no treatment control group, allocation method unclear, no blinding at all, adequate handling of the attrition, 3- and 6-month follow-up

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McCallion *et al.*, 1999 (U.S.A.)	Type III: Nursing Assistant Communication Program (NASCP): five 45-minute group sessions (lecture, role-play, practice, discussion, leader manual, videotape, participant workbook), Supplemented by: four 30-minute individual conferences (observation, discussion and feedback) and follow-up monitoring 3 months after all interventions (verifying continued use of the NACSP techniques, advice)	Staff (NAs): N = 88 Residents: N = 105	Staff: Knowledge about dementia and general behavior management issues; Turnover rates Residents: Symptoms of depression, agitation, disorientation, irritability and withdrawals; Physical restraints and Psychotropic medication use	KAT and MHQ Turnover rates CSDD, CMAI MOSES MDS+/ Frequency daily	Staff: No sig. effects on knowledge about dementia but on knowledge about the management of problem behaviors and agitated behavior (not sustained), (sig. decline in turnover rates from baseline to 6 months) Residents: Sig. decrease of depressive symptoms and verbally aggressive behavior (sustained), no consistent impact on disorientation, irritability or withdrawals and in the use of physical restraints, sig. reduction in the use of psychotropic medications (not sustained)	7	RCT, Random group assignment, unclear allocation method, blinding of the data collectors, no blinding of the participants, trainer and data analysts, (replication of treatment effects in the CG) crossover-design, attrition rate is not reported, but intention to treat analyze, 6-month follow-up
Burgio *et al.*, 2000 (U.S.A.)	Type IV: Training in communication skills and the use of memory books[b]: 3-hour in-service session (didactic training, role play, discussion of real life examples and of written vignettes, notebooks). Supplemented by: 4-week hands-on training and a staff motivational system (feedback, behavioral supervision, self monitoring as daily reminders, incentives)	Staff: N = 64 loss of 35% Residents: N = 67 loss of 27%	Staff: Use of communication skills Residents: Occurrence of residents behavior; Use of memory books	CSC CABOS Memory book checks	Staff: Sig. improvement in the use of communication skills and in positive verbal interactions between CNAs and residents (maintained) Residents: No changes in behavior. High availability of memory books (72–75%) during the hands-on phase (remained steady or increased)	6	RCT, Random group assignment, unclear allocation method, no blinding at all, adequate handling of attrition, 2 months follow-up

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Table 1. Continued

AUTHORS (COUNTRY)	INTERVENTION TYPE, -LENGTH (METHODS)	ANALYZED SAMPLE	OUTCOME DOMAINS	ASSESSMENT TOOLS	RESULTS (FOLLOW-UP-RESULTS)	QUALITY SCORE	METHODO-LOGICAL COMMENTS
Magai *et al.*, 2002 (U.S.A.)	Type I: Training in nonverbal communication: ten 1-hour sessions over 2 weeks (lecture/experiential sessions; discussion; training in emotional validation skills)	Staff: N = 21 (losses are not reported) Residents: N = 91 loss of 8%	Staff: Depression, Anxiety and Somatic symptoms Residents: Agitation, Depression and Behavioral symptoms); Facial expressions of emotions	BSI CMAI, CDS, BEHAVE-AD Observation during a semi-structured interview (MAX)	Staff: Caregivers' affective state improved in the IG and PG sig. from baseline to the 12-week follow-up Residents: No sig. change in residents symptoms, increased positive affect during the first 6 weeks after intervention in the IG (not sustained in the 12-weeks follow-up), decline for negative affect in all 3 groups (time-, but no time x treatment effect), no improvement in facial expressions of emotion	6	RCT, Random group assignment, unclear allocation method, placebo- and control group comparison, blinding of the trainer and data collectors, no blinding of the participants and data analysts, inadequate handling of the attrition, 3-, 6-, 9- and 12-week follow-up, very small staff sample
Matteson *et al.*, 1997 (U.S.A.)	Type IV: Education for environmental and behavior management based on Piaget's levels of cognitive development: 6 half-hour interactive educational videotapes within 6 months. Supplemented by 18 months of behavioral interventions for residents (individual care plans supported by reminders like colored dots), medication withdrawal protocols and environmental modifications	Residents: N = 57 loss of 39%	Residents: Cognitive level of development; Degree of cognitive impairment, Behavior problems; Psychotropic medications	Linton Piaget Test MMSE NHBPS Drug treatment protocol	Residents: No sig. changes after 3 months, after 12 and 18 months problem behaviors and some types of psychotropic medication decreased sig. in the IG but not in the CG.	6	NRCT, baseline screening of the resident population, environment equivalence assessment, adequate handling of the attrition, no blinding at all, 3-,12-,18-month measurement after baseline, but no follow-up after all interventions, high attrition

Kihlgren *et al.*, 1994 (Sweden)	Type III: Training in integrity-promoting care based on Erikson's theory of people's need: 1 week course[c] (video-recorded lecture and discussion). Support to apply the care during a 3-month intervention period	Residents: N = 29 loss of 36%	Staff and residents: Interaction behavior	Qualitative analysis of video-recorded interactions during social activities	Staff and residents: Increased understanding of demented patients' situation among staff, more sensitive (positive circle developed)	5	NRCT, inclusion criteria for the resident sample, blinding of the data analysts, no blinding of the trainer, the participants and the data collector, no follow-up, adequate handling of the attrition, small sample, high attrition
Rosen *et al.*, 2002 (U.S.A.)	Type I: Training on depression and dementia: 6[d] computer-based interactive video training modules in a television news-documentary format (monthly sessions) (individual self-paced training and an administrative software including interactive exercises and questions)	Staff: N = 61 loss of 78%	Staff: Training compliance and -satisfaction; Knowledge	Number of sessions attended and SRQ; Test (developed)	Staff: Sig. more compliance in the CS than in the LS, training satisfaction and relevance rated sig. higher in the CS than in the LS, sig. more improvement in knowledge in the CS than in the LS and CON	5	RCT, Random group assignment, unclear allocation method, placebo- and control group comparison, no blinding at all, inadequate handling of the attrition, no follow-up
Maas *et al.*, 1994 (U.S.A.)	Type IV: 80 hours training on dementia, cognitive and behavior manifestations and approaches to nursing care[e]: 40 hours classroom (methods are not reported) Supplemented by: 40 supervised clinical sessions and safe physical environment	Staff: N = 76 loss of 60%	Staff: Knowledge of AD; Job satisfaction; Absenteeism	KAT NSQ Time absent (hours)	Staff: No sig. differences over time and between the two conditions, but sig. difference between RN's and non-RN's	4	NRCT, no adjustment for confounders, no blinding at all, inadequate handling of the attrition, no follow-up, inadequate handling of the attrition, high attrition

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Table 1. Continued

AUTHORS (COUNTRY)	INTERVENTION TYPE, -LENGTH (METHODS)	ANALYZED SAMPLE	OUTCOME DOMAINS	ASSESSMENT TOOLS	RESULTS (FOLLOW-UP-RESULTS)	QUALITY SCORE	METHODO-LOGICAL COMMENTS
Peterson *et al.*, 2002 (U.S.A.)	Type I: Basic Care I: 6-hour class (lecture, video, role play, sensitization exercises, interactive discussion, brainstorming)	Staff: N = 72 loss of 58%	Staff: Dementia-related knowledge; Stress; Self-esteem	Dementia Quiz FCSI Empowerment scale (Klakovich, 1995)	Staff: Sig. improvement in dementia-related knowledge (sustained 6 to 8 weeks after the class), no conclusive effects of stress and self-esteem measures	3	BAS, no adjustment for confounders, no blinding at all, adequate handling of the attrition, 6 to 8 weeks follow-up, high attrition
Middleton *et al.*, 1999 (U.S.A.)	Type I: 1-day seminar (information, lecture, discussion, best practice guidelines, alternative care strategies to restraints)	Staff: N = 45 loss of 45%	Staff: Knowledge and Attitudes toward restraints use	Restraint Questionnaire for Staff (Hardin *et al.*, 1994)	Staff: Sig. changes in attitudes toward use of physical and pharmacological restraints in a few subscales, caregivers reported changes in facility and personal practice	3	BAS, no adjustment for confounders, no blinding at all, adequate handling of the attrition, no follow-up, high attrition
Lintern *et al.*, 2000 (U.K.)	Type II: Training in person-centered care: Two day training course for the home's senior staff (discussion of areas in need of development, construction of a development plan) followed by a 2-day training course for direct care staff (interactive discussion, lecture, role-play, small group work, exercises in DCM, demonstrations)	Staff: N = 34 (NAs + night staff) Residents: N = 44	Staff: Knowledge about dementia; Attitudes to people with dementia; Interaction-aspects; Problem solving Residents: Well-being and Quality of life	Quiz (Gilleard and Groom, 1994); ADQ and DCS; Observation (DCPA) DCM	Staff: Sig. more person-centered responses after the training, sig. more awareness of residents needs, sig. more engagement of activities and social interactions (not increased) in the IG, but no sig. change between the IG and CG Residents: No sig. improvement on the average well-being	2	BAS, cross-over-design, no adjustment for confounders???, no blinding at all, attrition rate is not reported, 6- and 12-month follow-up, results of the follow-up not reported, results of the questionnaires not demonstrated with data

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Cohen-Mansfield *et al.*, 1997 (U.S.A.)	Type I: Training program on dementia and wandering: 40 min. session (lecture, discussion and program outline).	Staff: N = 103 loss of 41% Residents: N = (is not reported)	Staff: Knowledge about dementia, pacing and wandering; Feelings and Perceptions of working with residents Residents: Indirect effects of the unit and on residents behavior	Quiz (Reindl, 1988) SSQ Behavioral observation	Staff: Sig. improvement in knowledge immediately after the training (not sustained), no sig. changes in feelings and perceptions of working with residents Residents: No sig. findings for agitated behavior.	2	BAS, no adjustment for confounders, no blinding at all, inadequate reporting of the attrition, follow-up only 1 month after the training, high attrition
Hagen and Sayers, 1995 (Canada)	Type I: Educational program[f]: three 30 minute-modules within three months (lecture, case studies, group discussion, role plays, pre-videotaped vignettes)	Staff: N = 134 loss of 13%	Staff: Incidents of physical aggression toward staff; Feedback and comments	Checklist for aggression[g] Not reported (qualitative analysis)	Staff: Reported incidents of physical aggression reduced sig., 87% of the staff indicated a great interest in and satisfaction with the program	2	BAS, no adjustment for confounders, no blinding at all, attrition rate is reported, but inadequately handled, no follow-up,
Cohn *et al.*, 1990 (U.S.A.)	Type I: Behavior management skills training: five 1.5-hour sessions at 1-month intervals (notebooks; overhead projections; case samples; interactive discussions; on the job exercises)	Staff: N = 77 NAs loss of 37%	Staff: Knowledge (behavior management and problem behaviors; care-giving behavior)	21-item test of basic and applied knowledge	Staff: Sig. improved knowledge within the first session, sustained across three additional sessions, sig. positive correlations between test performance and rating of current performance	1	BAS, no adjustment for confounders, different measures before and after the first session, no blinding at all, inadequate reporting of the attrition, no follow-up, high attrition
Feldt and Ryden, 1992 (U.S.A.)	Type III: Educational program: length is not reported (lecture; active learning, brainstorming; participant interaction; discussion, individual care plans) Supplemented by: a 6-week phase of CNS-assisted care (role modeling and problem solving)	Staff: N = 17 NAs Residents: N = 13	Staff: Knowledge of dementia care; Perceptions of residents and the Experience of care-giving	Test Not reported Not reported	Staff: No sign change on knowledge of dementia care, non-sig. trend toward receiving the residents more positively, NAs viewed their task of care-giving as sig. more rewarding and sig. less frustrating in the post test mean score than in the pre test mean-score	1	BAS, no adjustment for confounders, no blinding at all, attrition rate is not reported; instruments are not reported, no follow-up,

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Table 1. Continued

AUTHORS (COUNTRY)	INTERVENTION TYPE, -LENGTH (METHODS)	ANALYZED SAMPLE	OUTCOME DOMAINS	ASSESSMENT TOOLS	RESULTS (FOLLOW-UP-RESULTS)	QUALITY SCORE	METHODO-LOGICAL COMMENTS
Mathews and Altman, 1997 (U.S.A.)	Type I: 45–90 minutes workshop in the system of least prompt (lecture; practice, feedback)	Staff: N = 3 NAs	Staff: Performance of 9 specified interaction behaviors in specific tasks (i.e. dressing, brushing teeth)	Observation focusing on special 9 behaviors	Staff: Increased performance of the specified behavior skills for all 3 NAs following the training (aides performed 95% of the specified behaviors after the training)	1	BAS, no adjustment for confounders, no blinding at all, no follow-up, Very small sample (preliminary study)
Palmer and Withee, 1996 (U.S.A.)	Type I: N.A.P.P.I.: length is not reported, probably one training session (information, discussion)	Staff: N = 23 loss of 0%	Staff: Perception of work, frequency and Severity of problem behaviors, Changes in communication patterns around the issues of behavior management	Ryden's Perception Scale (Feldt and Ryden, 1992) and 4 questions; 4 questions	Staff: Positive shift in perception of work, frequency to be encountered with problem behaviors decreased (75- 56%), degree of danger ratings dropped (75% -50%), inter-shift communication and consultation increased (30% – 65%), no changes in interpersonal communication	1	BAS, no adjustment for confounders, no blinding at all, attrition is not reported, no follow-up, no calculations of significance
Ripich *et al.*, 1995 (U.S.A.)	Type I: The FOCUSED communication maintenance program[h] : 6 two-hour weekly sessions (lecture, discussion, role-play, videotaped vignette analysis)	Staff (NAs): N = 17	Staff: Learning objectives; knowledge of AD; Communication skills	Stufflebeam's method (Stufflebeam, 1971)	Staff: Increased knowledge in all areas with sig. gains in two modules (5 and 6), improvement in attitudes toward residents, sig. improvement in one question in communication satisfaction	1	BAS, no adjustment for confounders, no blinding at all, attrition not reported, 6-month follow-up, but results are not reported
Williams *et al.*, 1994 (U.S.A.)	Type I: 45–60 minutes session in skills, empathy and theory (didactic presentation, discussion, videotaped examples, experiential exercise in empathy)	1 ARDSU (number of staff and residents is not reported)	Residents: Records for noteworthy incidents of combative behavior during the past year	Number of noteworthy incidents of combative behavior	Residents: Sig. reduction of the recorded incidents after the training	1	BAS, no adjustment for confounders, no blinding at all, attrition rate is not reported, no follow-up

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Wilkinson, 1999 (U.S.A.)	Type III: Educational program on the management of assault behaviors: 1-day workshop (lecture, discussion, exercises, role play, demonstrations, writing an individualized care plan for self controlling during an imagined assault) Supplemented by: 11 months ongoing training by a special staff nurse (monthly practices, problem solving, team approach)	Staff: N = 32 Residents: N = 40	Staff: Frequency of patient-to staff assaults Residents: Severity of resultant injuries	Number of patient to staff assaults Classification in levels of severity	Staff: Nearly two-fold increase of reported assaults from the period prior to implementation of the program (55) to the 11 months during which the program was in process (99). Residents: Reduction of the resultant minor injuries requiring medical attention to patients by 58%	0	BAS, no adjustment for confounders, no blinding at all, attrition rate not reported, no follow-up after the ongoing training

Comments: Type: I = predisposing factors only; II = predisposing plus enabling; III = predisposing plus reinforcing; IV = all three types of interventions; Sig. = statistically significant; RCT = Randomized controlled trial; NRC = Non-randomized controlled trial; BAS = Before-and-after study; CNA = Certified nursing assistant; NA = Nursing assistant; CNS = Clinical nurse specialists; RN = Registered nurses; SCU = Special care unit; ARDSU = Alzheimer's and Related Disorders Specialty Unit; IG = Intervention group; PG = Placebo group; CG = Control group; CS = Computer Site; LS = Lecture Site; CON = Control Site; AD = Alzheimer Disease; N.A.P.P.I. = Non-Abusive Psychological and Physical Interventions; FSM = Formal staff management; CSM = Conventional staff management; MDS+ = Minimum Data Set

Instruments: IBM = Interaction Behaviour Measure (McCrosky and Wright, 1971); VAS = Visual Analog Scale; NHUS = Hassles subscale of the Nurses Hassles and Uplifts Scale (Craig, unpublished data, 1995); MIBM = Modified Interaction Behaviour Measure (Burgener *et al.*, 1992); PAS = Pittsburgh Agitation Scale (Rosen *et al.*, 1994); LPRS = London Psychogeriatric Rating Scale (Hersch *et al.*, 1978); BMSC = Behavior Management Skills Checklist (Stevens *et al.*, 1998); CABOS = Computer-Assisted Behavioral Observation System (Burgio, 1996); CMAI = Cohen-Mansfield Agitation Inventory (Cohen-Mansfield *et al.*, 1989); KAT = Knowledge of Alzheimer Test (Maas and Buckwalter, 1990); MHQ = Penn State Mental Health Questionnaire (Spore *et al.*, 1991); CSDD (CDS) = Cornell Scale for Depression in Dementia (Alexopoulos *et al.*, 1988); MOSES = Multidimensional Observation Scale for Elderly Subjects (Helmes *et al.*, 1987; Pruchno *et al.*, 1988); CSC = CNA Communication Skills Checklist (Allen-Burge *et al.*, 2001); BSI = Brief Symptom Inventory (Derogatis and Spencer, 1982); BEHAVE-AD = Behavioral Pathology in Alzheimer's Disease Rating Scale (Reisberg *et al.*, 1987); MAX = The maximally discriminative facial movement coding system (Izard, 1979); MMSE = Mini-mental State Examination (Folstein *et al.*, 1975); NHBPS = Nursing Home Behavior Problem Scale (Ray *et al.*, 1992); SRQ = Satisfaction/Relevance Questionnaire (author is not reported), NSQ = The Nursing Satisfaction Questionnaire (McCulloch, 1974); FCSI = Formal Caregiver Stress (Fopma-Loy, 1991); ADQ = Approaches to Dementia Questionnaire (author is not reported); DCS = The Dementia Care Styles Questionnaire (Brooker *et al.*, 1998); DCPA = The Dementia Care Practitioner Assessment (Lintern and Woods, 1996); DCM = Dementia Care Mapping (Kitwood and Woods, 1995); SSQ = Staff Satisfaction Questionnaire (designed by the investigator)

[a] This study is also described in another report (Stevens *et al.*, 1998).

[b] This study is also described in other reports, including a preliminary study (Allen-Burge *et al.*, 2001; Bourgeois *et al.*, 2001; 2004; Dijkstra *et al.*, 2002).

[c] This study is also described in other reports under other aspects (Bråne *et al.*, 1989; Kihlgren *et al.*, 1990; 1992; 1993; 1996; Ragneskog *et al.*, 1993; Widerlov *et al.*, 1989).

[d] The program consists of 12 modules, but only the first six modules were evaluated.

[e] Program based on Hall and Buckwalter's progressively lowered stress threshold model (Hall and Buckwalter, 1987).

[f] Developed by Feldt and Ryden (Davis *et al.*, 1992).

[g] An amalgamation of Ryden's Aggression Scale (Ryden, 1988) and a form used by Juan de FucaHospital in Victoria, British Columbia (Monahan, 1992).

[h] This study is also described in another report (Ripich, 1994).

Table 2. Predisposing, enabling and reinforcing factors (Aylward *et al.*, 2003)

FACTORS	CHARACTERIZATION
Predisposing	- Involve primarily the communication or dissemination of information designed to modify an individual's knowledge, beliefs and attitudes (e.g. lectures, written information, or video presentations)
Enabling	- Conditions and resources within the environment that allow or enable an individual to implement new skills (e.g. modified work schedule, practice opportunities, policy or treatment guideline changes)
Reinforcing	- Provide an individual with cues or reminders to implement new skills, or that reinforce the use of new skills (e.g. peer support, advice, and feedback)

Table 3. Criteria for rating quality of studies (Brodaty *et al.*, 2003)

CRITERION	SCORE
Design	
- Randomized	1
- Controlled (or comparison group used)	1
Subjects	
- Use of standardized diagnostic criteria	1
- All subjects accounted for/withdrawals noted	1
Outcomes	
- Well-validated, reliable measures (caregiver and/or patients)	1
- Objective outcome (e.g. institutionalization or death)	1
- Questionable unreliable outcome measures	0
Statistics	
- Statistical significance considered	1
- Adjustment for multiple comparison	1
- Evidence of sufficient power	1
Results	
- Blind ratings	1
- Follow-up assessment 6 months or beyond	1
Good quality	>7
Poor quality	<5

focusing on the four potential sources of systematic bias: selection bias, performance bias, attrition bias, and detection bias.

Results

Our initial search yielded 90 references, including earlier reviews. Twenty-one studies met all inclusion criteria. Sixty-six articles were eliminated, since both

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investigators believed they did not fulfill the inclusion criteria. In addition, three further articles were eliminated, as the two investigators could not reach a consensus (Kappa = 0.911). Table 1 summarizes the categories. Most studies (16) were conducted in the U.S.A. Three studies took place in Canadian long-term care facilities and only two studies came from Europe, one from Sweden and one from the United Kingdom.

Educational objectives

While all staff in-service training addressed dementia care, educational objectives differed. Seven programs focused on reducing or preventing behavioral problems (Cohen-Mansfield *et al.*, 1997; Feldt and Ryden, 1992; Hagen and Sayers, 1995; Matteson *et al.*, 1997; Palmer and Withee, 1996; Wilkinson, 1999; Williams *et al.*, 1994); four aimed to improve staff to resident communication (Burgio *et al.*, 2000; Magai *et al.*, 2002; McCallion *et al.*, 1999; Ripich *et al.*, 1995); and two taught social interaction skills between staff and residents (Kihlgren *et al.*, 1994; Wells *et al.*, 2000). Methods of staff training also varied. To achieve enhanced interaction, for example, one program trained the staff in integrity-promoting (Kihlgren *et al.*, 1994); another trained caregivers in social skills (Wells *et al.*, 2000). Reducing physical and pharmacological restraints was the goal of only one program (Middleton *et al.*, 1999). The remaining studies focused on the objective of general improvement of dementia care and used different approaches. Some training focused on improving behavior management skills (Burgio *et al.*, 2002; Cohn *et al.*, 1990; Peterson *et al.*, 2002), person-centered dementia care (Lintern *et al.*, 2000), or job satisfaction (Maas *et al.*, 1994). Other programs tried to achieve this objective by teaching the staff to use the system of least prompts to reinforce the engagement of residents in self-care activities (Mathews and Altman, 1997) or in training staff in mental health especially for aging, depression and dementia (Rosen *et al.*, 2002).

Intervention types and training methods

About half of the in-service training used only predisposing intervention strategies to achieve their objectives (Cohen-Mansfield *et al.*, 1997; Cohn *et al.*, 1990; Hagen and Sayers, 1995; Magai *et al.*, 2002; Mathews and Altman, 1997; Middleton *et al.*, 1999; Palmer and Withee, 1996; Peterson *et al.*, 2002; Ripich *et al.*, 1995; Rosen *et al.*, 2002; Williams *et al.*, 1994). New material was presented in workshop format, without any follow-up support to put learning into practice. Mostly, methods such as lectures, discussions, videotaped depictions, role-playing, experiential exercises, active learning techniques, brainstorming, workbooks, written or real-life vignettes and feedback were used and combined. Almost all programs were group interventions. Only one study described a single (individual) intervention, which presented the educational content as computer-based video modules in a television news documentary format (Rosen *et al.*, 2002).

The other half of the in-service training offered nursing home staff further support to reinforce or enable the transfer of the acquired knowledge (Burgio

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et al., 2000; 2002; Feldt and Ryden, 1992; Kihlgren *et al.*, 1994; Lintern *et al.*, 2000; Maas *et al.*, 1994; Matteson *et al.*, 1997; McCallion *et al.*, 1999; Wells *et al.*, 2000; Wilkinson, 1999). Of these studies, one included enabling strategies (Type II) by constructing a development plan in a home's senior staff training course before beginning a training course for the direct care staff (Lintern *et al.*, 2000). Five studies included reinforcing factors in addition to an initial training program (Type III) (Feldt and Ryden, 1992; Kihlgren *et al.*, 1994; McCallion *et al.*, 1999; Wells *et al.*, 2000; Wilkinson, 1999). Within these studies, follow-up support was offered through monthly practice or performance feedback, CNS-assisted care, individual conferences or reinforcement sessions. Methods such as observation, discussion, role modeling, problem solving, feedback and advice were used to reinforce the newly acquired knowledge.

Four of the 21 studies used a combination of all three types of intervention strategies (Type IV) (Burgio *et al.*, 2000; Burgio *et al.*, 2002; Maas *et al.*, 1994; Matteson *et al.*, 1997). These in-service training programs offered initial training supported by both reinforcing and enabling intervention strategies to encourage, facilitate and sustain the transfer of new learning into practice. Training and follow up support methodologies were similar to those previously described. However, there were differences. Two of these Type IV interventions included a staff motivational system (Burgio *et al.*, 2000; 2002). The enabling strategy of one training program produced a safe physical environment that allowed unrestricted safe wandering in the care unit and in a secure outdoor area as well as reducing stimulation through avoiding excessive colors and activity. (Maas *et al.*, 1994). Another training program used intervention elements on a large-scale: many smaller environmental modifications, behavioral interventions for the residents, a drug treatment protocol and individual care plans were used to support the implementation of new learning. (Matteson *et al.*, 1997).

Duration

Duration of the in-service training ranged from a 40-minute session (Cohen-Mansfield *et al.*, 1997) to 40 hours of classroom instruction (Maas *et al.*, 1994), although the time period over which the 40 hours was delivered was not reported. The duration of ongoing support ranged from a three-week hands-on phase to an 18-month intervention period. Excluding studies that did not report exact duration of intervention, total duration, (including follow-up support), ranged from a 40-minute session (Cohen-Mansfield *et al.*, 1997) to an intervention period of 24 months (Matteson *et al.*, 1997).

Sample sizes, trainer characteristics and treatment compliance

Sample sizes at baseline were generally small, ranging from 3 to 134 in the staff samples and from 13 to 105 in the residents samples. Regarding the sample sizes after attrition, six studies used data from fewer than 50 participants. Eleven studies gave all members of the nursing home staff the opportunity to participate in the training sessions; two studies trained certified nursing assistants

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(CNAs) only, and five studies offered training to nursing assistants (NAs) only.

Almost half of the studies gave no information about the persons doing the training. In the remaining studies, half of the educational sessions were taught by gerontologists, clinical psychologists or care scientists, most coming from the studies' research staff team (Burgio *et al.*, 2000; 2002; Hagen and Sayers, 1995; Kihlgren *et al.*, 1994; Magai *et al.*, 2002). The other half reported that training was conducted by persons with care experience such as master's level social workers, registered nurses with advanced degrees or gerontological clinical nurse specialists (Cohen-Mansfield *et al.*, 1997; Cohn *et al.*, 1990; Feldt and Ryden, 1992; McCallion *et al.*, 1999; Wilkinson, 1999). Treatment fidelity was never addressed accurately. Some studies described treatment compliance of staff (Burgio *et al.*, 2000; Cohn *et al.*, 1990; Hagen and Sayers, 1995; Magai *et al.*, 2002; McCallion *et al.*, 1999; Rosen *et al.*, 2002; Wells *et al.*, 2000). A few authors reported attempts to increase staff rates of attendance (Burgio *et al.*, 2000; Hagen and Sayers, 1995; Magai *et al.*, 2002; McCallion *et al.*, 1999; Wells *et al.*, 2000). For example, training was repeated several times to accommodate staff on all shifts, and each session was repeated until all caregivers received all sessions, or individual make-up sessions were provided to participants unable to attend a session. In one study, colorful poster boards recording staff attendance were prominently displayed in the unit (Hagen and Sayers, 1995). In another training program, staff received public recognition for meeting job performance goals during the hands-on phase (Burgio *et al.*, 2000).

Outcome domains

The effectiveness of the in-service training was most frequently measured by staff outcomes (19 studies). Almost half of these studies measured the effectiveness both on staff and resident level (Burgio *et al.*, 2000; 2002; Cohen-Mansfield *et al.*, 1997; Kihlgren *et al.*, 1994; Lintern *et al.*, 2000; Magai *et al.*, 2002; McCallion *et al.*, 1999; Wells *et al.*, 2000). Only two studies used resident outcomes (Matteson *et al.*, 1997; Williams *et al.*, 1994). The main outcome domains for staff were the improvement of knowledge (52%) and behavioral changes (48%), followed by attitudes toward people with dementia or their family caregivers (29%). Further outcome domains were the impact of the training on caregiver's morbidity or well-being measured by psychological symptoms, stress levels, self-esteem, staff turn-over rates, absenteeism or job satisfaction (Maas *et al.*, 1994; Magai *et al.*, 2002; McCallion *et al.*, 1999; Peterson *et al.*, 2002; Rosen *et al.*, 2002; Wells *et al.*, 2000).

The main outcome domain for residents was change in rate of inappropriate behavior (48% of the studies). Less frequent outcomes were the psychological well-being of residents (Lintern *et al.*, 2000; Magai *et al.*, 2002; McCallion *et al.*, 1999), the use of psychotropic medications (Matteson *et al.*, 1997; McCallion *et al.*, 1999) and the frequency of resident assaults on staff (Wilkinson, 1999; Williams *et al.*, 1994).

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Assessment tools

The assessment methodologies varied widely across studies (see Table 1). Some studies utilized standardized scales or only one item from such a scale, others used systematic observation or developed an assessment tool especially for the study.

Methodological quality and comments

Methodological quality scores are rated out of a possible score of 11. Studies with a score greater than eight indicate good quality, and under fiveindicate poor quality (seeTable 3). The majority (13 studies) were of poor quality (Cohen-Mansfield *et al.*, 1997; Cohn *et al.*, 1990; Feldt and Ryden, 1992; Hagen and Sayers, 1995; Lintern *et al.*, 2000; Maas *et al.*, 1994; Mathews and Altman, 1997; Middleton *et al.*, 1999; Palmer and Withee, 1996; Peterson *et al.*, 2002; Ripich *et al.*, 1995; Wilkinson, 1999; Williams *et al.*, 1994). Only one study was rated of good methodological quality, scoring eight (Wells *et al.*, 2000), followed by two studies with a quality score of seven (Burgio *et al.*, 2002; McCallion *et al.*, 1999).

Almost half of the studies were simple before-and-after studies (BAS) (Cohen-Mansfield *et al.*, 1997; Cohn *et al.*, 1990; Feldt and Ryden, 1992; Hagen and Sayers, 1995; Lintern *et al.*, 2000; Mathews and Altman, 1997; Middleton *et al.*, 1999; Palmer and Withee, 1996; Peterson *et al.*, 2002; Ripich *et al.*, 1995; Wilkinson, 1999; Williams *et al.*, 1994). Three studies were non-randomized but controlled trials (NRCT) (Kihlgren *et al.*, 1994; Maas *et al.*, 1994; Matteson *et al.*, 1997), and six of the 21 studies used the most rigorous randomized controlled design (RCT) (Burgio *et al.*, 2000; Burgio *et al.*, 2002; Magai *et al.*, 2002; McCallion *et al.*, 1999; Rosen *et al.*, 2002; Wells *et al.*, 2000).

Very few attempts were made to enhance internal validity. Studies using RCT design, attempted to prevent selection bias by using allocation of nursing homes or units to different treatment conditions, but none described how this was achieved. Other studies made few attempts to adjust for confounding variables.

Attempts to limit performance and detection bias were reported in only four studies (Kihlgren *et al.*, 1994; Magai *et al.*, 2002; McCallion *et al.*, 1999; Wells *et al.*, 2000). Mostly double-blind methodology was used, so that the participants or the trainer and the data collectors were blinded. All other studies were open trials. There were also few attempts to guard against attrition bias. Six studies provided no information on this subject (Alderson *et al.*, 2004; Davis *et al.*, 1992; Feldt and Ryden, 1992; Kihlgren *et al.*, 1994; Wilkinson, 1999; Williams *et al.*, 1994). In the remaining studies attrition ranged from 0% to 78%. A response-rate below 80% was reported in nearly half of the studies (10), and a response-rate below 50% in five of these studies. The highest attrition rates were reported in staff samples.

None of the studies reported power calculations or calculations of effect sizes. Only one study reported an intention-to-treat analysis to assess the treatment effectiveness (McCallion *et al.*, 1999). Almost half of the studies did not describe evaluation of follow-up support in their methodological design, yielding no evidence of a sustained impact of these interventions. The reported length of

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follow-up varied between 3 weeks and 18 months, with only six studies using a follow-up assessment 6 months later (Burgio *et al.*, 2002; Lintern *et al.*, 2000; Matteson *et al.*, 1997; McCallion *et al.*, 1999; Wells *et al.*, 2000).

Altogether, the assessment of methodological quality proved difficult due to the variable quality of reporting.

Results of the program evaluations

Concerning treatment efficacy, nearly all studies reported positive changes in outcome domains. However, the heterogeneity of the intervention types and methodological designs used allow little ability to compare results. In view of the methodological weaknesses identified in this review, the evidence of effectiveness for most studies is not strong and must be interpreted with caution.

These three randomized studies with relatively good methodological quality and extensive intervention strategies demonstrated significant results on staff and resident behavior that were mostly sustained. The strongest evidence of positive effects of training came from Wells *et al.* (2000). This study reported significant effects on staff and resident outcomes, using an intervention focusing on improving abilities in morning care routines (Type III). Wells and colleagues reported that staff and resident interaction behavior improved significantly and these results were sustained at a 6-months' follow-up. Burgio *et al.* (2002) evaluated training in staff behavioral management skills (Type IV). Immediately following training and at a 6-months' follow-up, residents demonstrated reduced levels of agitation, and staff demonstrated significantly improved communication skills. Following a communication program (Type III) by McCallion and colleagues (1999), staff improved their knowledge about the management of problem behaviors that were not sustained, and a sustainable decline in turnover rates of staff resulted. Residents demonstrated a sustained decrease in depressive symptoms and verbally aggressive behavior, whereas the use of psychotropic medications was not sustained (McCallion *et al.*, 1999). The remaining studies were of moderate to poor methodological quality, yet reported positive post-intervention results. Results are presented in Table 1 with quality score and methodological comments. Aggregating the results, irrespective of the methodological design or intervention type used, authors report overwhelmingly positive effects of training on staff with at least one positive effect reported in every study, except one.

Of the 11 studies examining outcomes for residents, five reported significant positive changes, particularly positive behavioral changes (Burgio *et al.*, 2002; Matteson *et al.*, 1997; McCallion *et al.*, 1999; Wells *et al.*, 2000; Williams *et al.*, 1994). The remaining studies described positive effects but did not show significant results. Even though changes of staff behavior or knowledge were commonly reported these positive effects seldom influenced the well-being or behavior of residents.

The comparison of the results of studies with the same intervention type, irrespective of methodological quality, identified studies of Type III and IV demonstrating a higher proportion of positive effects on staff and on residents'

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behavior, often continuing to the follow-up assessment. In contrast, studies of the Type I interventions often demonstrated significant improvement of staff knowledge immediately after the training, but was not sustained, nor was positive change found in resident behavior. Most Type I interventions did not use follow-up assessment, so sustained effects were not measured.

Discussion

Even though dementia care in nursing homes is an issue of great importance for society in general, a thorough literature search could identify only 21 studies on this topic evaluating an in-service training program for nursing home staff. This amount is small, despite the fact that our search was not limited to studies with an RCT study design. Most studies were conducted in the United States, possibly stimulated by the Omnibus Reconciliation Act (OBRA, 1987) which prevented the use of psychotropic medication for behavioral control in dementia, and mandated increases in obligatory training hours for nursing home staff. We found only two studies conducted in Europe, highlighting the lack of studies on this topic in particular.

The small number of intervention studies conducted in this area probably results from the many barriers accompanying the setting. Numerous difficulties make research in this area cumbersome, or rather limit it (Cohen-Mansfield, 2001), as most researchers also determined. The collaboration of nursing homes, relatives and nursing home staff is absolutely necessary, but some nursing homes are reluctant to be involved. There may be many reasons for this: the additional workload for already stressed employees, fear of a negative evaluation of the facility with possible negative consequences (e.g. damaged reputation, lost income, changes in personnel). In addition, organizational characteristics can affect the implementation of newly learned skills in several ways. Sometimes environmental or organizational changes are necessary to enable participants to translate their newly learned skills into action. Therefore outcomes are not only a question of willingness to participate in training, but also of funding and time. Further barriers derive from the residents' frailty. In addition to their dementia, possible impairment of vision, hearing, language or mobility also acts as hindering factors. In particular, limited communication abilities make the research findings extremely dependent on the cooperation of caregivers, relatives and nursing homes. These limitations require the informed consent of relatives and the involvement of caregivers (who may not see the research as relevant of valuable) to give information and to assess the residents' behavior. Attrition is a major issue. Owing to residents' frailty and old age, death or acute illness often occur during the study and sample sizes are reduced. In addition, staff perceptions of being over-burdened at work and having limited time, high rates of absenteeism and staff fluctuations contribute to a reduction in study compliance among the participating staff.

Apart from these barriers and difficulties with such research, there is also a paucity of strong evidence in the intervention studies reviewed. Although most studies reported successful outcomes, these results should be considered

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with caution due to methodological weaknesses. In accordance with the results of previous reviews of the literature, many studies still suffered from serious methodological weaknesses. Most studies made only few attempts to limit the methodological bias. For example, bias associated with the method of allocation could probably be avoided by improving the quality of reporting. However, some incompletely implemented methods (i.e. blinding) seem to be the result of limited research funding. The very small number of trials designed to minimize performance bias in blinding participants could be a consequence making it necessary to inform the participating nursing homes and staff before their collaboration.

In many studies new instruments were developed and evaluated especially for the study and consequently the reliability and validity of results would be questionable. Staff behavior was usually evaluated by observation in special care situations. Resident behavior was assessed mostly by checklists completed by the nursing home staff: methods that are subjective and contain the possibility of bias. For example, counting an apparently objective measure like staff to patient assaults largely depends on the definition of what an assault is, and this might differ with each investigator.

The most important issue of the reviewed studies is whether or not the training can be transferred from theory into practice and sustained over time (Aylward *et al.*, 2003). Nearly half of the studies provided ongoing support to encourage and facilitate such a transfer. This review has highlighted that staff participating in a Type III or Type IV training intervention demonstrated successful results, in particular the continued transfer of new learning into practice, and residents demonstrated positive behavior changes. These training intervention types appear to be a trend in nursing home staff education. Agreeing with previous reviews (Aylward *et al.*, 2003; Cohen-Mansfield, 2001), our findings suggest ongoing training, organizational and environmental changes to be successful in modifying both staff and resident behavior.

Our review found many methodological weaknesses, such as insufficient randomzation, a lack of appropriate allocation methods, insufficient blinding of care providers and investigators, inadequate handling of the attrition, and low internal validity or missing calculations of effect sizes. Because of these methodological weaknesses in most studies in a Type I intervention, there was no strong evidence that these interventions worked, but there was also no evidence denying their ability to improve staff and resident behavior. These studies did not demonstrate follow-up evaluations and lacked outcomes at the resident level.

Resident well-being and quality of life improvement is central to staff training in these evaluated studies. In our review, most studies examined the efficacy of their intervention on staff and reported positive changes. These results seemed likely if participants received direct attention during the intervention phase. However, we think this is only one objective of in-service training. The other objective would be positive behavior changes in staff that improve the well-being of residents. Many studies did not report outcomes on resident behavior or well-being.

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Conclusions

Many reviewed intervention studies conducted on this topic show severe methodological weaknesses. Therefore, the results of this review outline the need to conduct more rigorous research in all countries, especially in Europe, to establish strong evidence for the effectiveness of these interventions and to improve the quality of care for residents suffering from dementia. This review also highlights the need to consider organizational or system factors of individual nursing homes and how these affect outcomes of training. In addition to more methodologically rigorous studies, future research should also concentrate on examining efficacy of all levels needing improvement and on follow-up evaluations. Those involved in evaluating nursing home staff dementia care training programs need to regroup and focus on smaller, well-defined and methodologically strong efficacy trials to determine what does and does not to work to improve dementia care.

Conflict of interest

None.

Description of authors' roles

B. Kuske designed the study, formulated the research question, analyzed the data and wrote the manuscript. B. Kuske and S. Hanns conducted the literature search and independently rated the papers. S. Hanns and T. Luck assisted in the preparation of the manuscript. S. G. Riedel-Heller, M. C. Angermeyer and J. Behrens supervised the project and provided independent adjudication and advice.

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